

Amsterdam Gardens are unknown, I am fortunate in being able to give the south end of New Guinea, opposite Yule Island, as the true habitat of *Goura scheepmakeri*, having been kindly informed by Mr. Selater that several specimens of it are contained in the last collection sent to the Civic Museum of Genoa, by the indefatigable Italian traveller Signor d'Albertis, from that locality.

December 7, 1875.

George Busk, Esq., F.R.S., V.P., in the Chair.

The following report on the additions to the Society's Menagerie during the month of November 1875 was read by the Secretary:—

The total number of registered additions to the Society's Menagerie during the month of November 1875 was 98, of which 2 were by birth, 35 by presentation, 38 by purchase, 4 by exchange, and 19 were received on deposit. The total number of departures during the same period, by death and removals, was 124.

The most noticeable additions during the month were:—

1. A female Beisa Antelope (*Oryx beisa*) from Eastern Africa, presented by H.H. the Sultan of Zanzibar, and received November 8, 1875. This addition is the more welcome, as it makes a pair to the male of the same species presented by Admiral A. Cumming, R.N., in 1874. I believe that this is the only pair of this fine Antelope in Europe.

2. Two All-Green Tanagers (*Chlorophonia viridis*) from Brazil, purchased November 16, 1875. This species is new to the collection, and has not, so far as I know, been previously received in a living state.

Mr. Selater exhibited a skin of *Hypocolius ampelinus*, Bp. (Consp. i. p. 336; Heuglin, Ibis, 1868, p. 181, pl. v.), which had been obtained by Mr. W. T. Blanford at Mazátáni Nai, in Upper Scinde, to the west of Shikarpúr, in March 1875, as already recorded by Mr. Blanford in 'The Ibis,' 1875, p. 388. M. Oustalet, of the Muséum d'Histoire Naturelle, Jardin des Plantes, Paris, had kindly compared this specimen with an adult male example from Sennaar, received from M. Botta (the original discoverer of this curious bird) in 1839, and had found them completely identical. M. Oustalet stated that there were three mounted specimens of *Hypocolius ampelinus* in the Gallery of the Paris Museum, received from M. Botta.

Mr. Selater remarked that this discovery was of special interest, as a further proof of the extension of some of the most characteristic types of the Æthiopian Fauna into Western India.

Mr. Selater read an extract from a letter addressed to him by

Mr. H. A. Wickham, dated Piquiahíba, near Santarem, Brazil, July 31, 1875.

Mr. Wickham said, "It may interest you to know that the large blue Hyacinth Macaw (*Ara hyacinthina*) is to be found much nearer Santarem than has been hitherto supposed. I have just been for a three days' hunt through the forest covering the tableland south of this place towards the Curuá river. Along the sides of a water-course we traversed, these birds appeared to be quite common, their peculiar quavering caw being constantly heard; but so local did they seem to be, that five or six miles further on we neither saw nor heard them."

Prof. Owen read the twenty-second of his series of Memoirs on *Dinornis*, containing a restoration of the skeleton of *Dinornis maximus*, Owen.

This paper will be published in the Society's Transactions.

The following papers were read:—

1. Description of a new Species of *Dolichotis*. By Dr. HERMANN BURMEISTER, Director of the National Museum, Buenos Aires, F.M.Z.S.

[Received September 20, 1875.]

. (Plate LXIX.)

The genus *Dolichotis*, one of the best-marked of the family Caviini, differs strikingly from the rest of the group in the great size of its ears. It was founded by Desmarest in 1822, the only known specimen having been first described by Azara under the Spanish name *Liebre patagona*. This animal is well known its native country under the last name, and is common in the districts of Upper Patagonia, near the Rio Negro, and in the western provinces of St. Luis and Mendoza, but was long rare in European collections.

The investigations of Darwin, Waterhouse, and myself (*Reise durch die La Plata-Staaten*, tom. ii. p. 422) have given full particulars as to its habits, external characters, and anatomy, the last-named part of its organization having been shortly described in my work above referred to.

Till now no second species has been known; and I was therefore surprised on receiving an animal, obtained by Dr. C. Berg, the able inspector of the Public Museum, which resembled the Patagonian Hare, but which indicated by the still greater size of its ears a new species of *Dolichotis*.

It is strange that an animal as large as a common rabbit should have escaped the notice of scientific men in a country so much visited by travellers of late years; but as this animal lives in a region remote



H. Burmeister del. J. Smut lith.

M & N Harhart imp.

DOLICHOTIS SALINICOLA.



from the general route of travellers from the south to the north of the Argentine Republic, the fact becomes less surprising.

This species exists only in the vicinity of the great Central-Argentine desert known under the name of Salina, a waste covered by saline exudations, which forms the lower central part of the country, unsettled and almost devoid of vegetation. This region is now penetrated by the new Central Argentine Railway; and the specimens were killed near the stations Totoralejo and Recreo, about lat. 29° S. and long. 65° W. Therefore I propose to name the species

DOLICHOTIS SALINICOLA, sp. n. (Plate LXIX.)

The animal is well known to the inhabitants under the name *Cujeño* (rabbit), which name they also give to all the small species of Cavy which are common in more fertile parts of the country. It is esteemed by them good food; and many of this new species have long been eaten by the Ganchos. Its is only its activity and its retreat into the most sterile parts of the country (where investigations are difficult to make), also its habit of living in old caves in the ground (which it shares with the true species of *Cavia*), that could have preserved its existence.

The accompanying figure (Plate LXIX.) shows that this new species has the general appearance of the Patagonian Cavy, but has somewhat shorter legs and is of a smaller size, resembling in colours and figure the common rabbit.

The two specimens which have come under my notice are male and female, but are very much alike in appearance and colour; the female is somewhat more slender, and the head smaller.

The whole length of the head and body is 18 inches, height 9 inches in its natural position; the head 4 inches long, the neck 2 inches, the ears 2 inches high; the fore legs 5 inches from the elbow to the end of the toes, and the hind legs $7\frac{1}{2}$ inches from the knee to the beginning of the toes, of which the longest is 1 inch long.

The fore feet have four small toes, every one with a short acute claw; the hind feet are provided with three larger toes with long claws, the middle one being much longer than the other two. The soles are naked, each toe has a small pad beneath the nail, and a second of remarkable thickness (especially behind) further back.

The hind foot has also a long naked black stripe on the back of the tarsus, commencing near the hock and descending to the central pad of the foot, but much narrower below.

The tail is not entirely wanting, but is represented by a short conical naked wart. In all these particulars this species agrees with the other from Patagonia. Beginning the detailed description with the head, the whole figure is broader and the lips thicker than in the true Cavies. The whole nose is covered with short hairs, and only a small blackish margin of the nostrils is naked; even the descending fold in the middle of the upper lip, so well known as a peculiarity in many of the *Glires* (and which sometimes occurs in a human being as a deformity), is covered with short white hairs. On the upper lip are many long black bristles, the longest of them being 3–4 inches

long; and two or three of the same kind, but somewhat shorter, stand over the eyes near the anterior angle. These organs are large, surrounded by narrow black naked margins, the upper margin furnished with a series of black bristles half an inch long, extending obliquely over the eye. The ears are placed 1 inch behind the eyes; and in front of each is a large naked blackish space descending to the neck. The external ear is 2 inches long, very broad at the base, deeply emarginate behind, and somewhat pointed above the emargination. The middle of the inside of the ear is bare; but the whole margin and the outside are covered with short hair; black on the outside and white within, the margins fringed with black hair which is long and dense on the upper part of the circumference.

The whole body of the animal is clothed with fine but simple hair, except the pads, already mentioned, and the tail-wart. The hair is generally one inch in length, becoming somewhat longer on the underside and gradually shorter on the legs, and very short on the feet and toes.

The colour of the animal is like that of the Wild Rabbit, but somewhat more red-brown on the upper parts of the body, especially behind. The hair is whitish grey at the base, ringed with black in the middle, then of a clear yellow or reddish yellow, which is succeeded by a smaller black ring near the tips. The tips of the hairs are abruptly thinner than in the middle, and black. The whole underside from the breast between the fore legs to the anus, the inside of the legs, and the rump are white; the lips, throat, two small spots before and behind the eye, and a somewhat larger spot behind the ear are also white; but the side of the head and the underside of the neck are clear reddish brown, especially the under portion of the cheeks between the lips and the ears. The iris is clear brown; and the claws are black.

The female has two teats in the inguinal region near the inside of the femur; and she seems generally to give birth to two young at a time, if she does not lose one, which, as is the case with the Patagonian species, seems to be very common. Three individuals are therefore often found together, as the two sexes live in company and are accompanied by their young as long as it is dependent upon them. Families of more than three are not seen; and the species is never found in bands as the Vizcacha.

The animal is very active, escaping with great rapidity under the small bushes of aculeate leguminous plants which are common in that part of the country, and hiding in the thickest of the bushes, where it seems to have its burrows. This species avoids open grounds, like the Patagonian Cavy.

Of the internal parts I know only the skull, which is entirely of the same form as that of *Dolichotis patagonica*, but much smaller, scarcely half the size. The skull has the same broad front, with the large superciliary margins and all the other peculiarities mentioned by Mr. Waterhouse (Nat. Hist. of Mam. vol. ii. p. 156). The teeth are the same; each of the four molars has two triangular lobes, except the smallest of the upper jaw; the first of the under jaw fur-

nished only with a short roundish prolongation on the fore part of the first lobe, and not with three as in the Patagonian species.

The incisors are narrow and clear yellowish on the anterior surface.

With respect to the three lobes of the first molar in the under jaw of *Dolichotis patachonica*, I may mention that this configuration is only found in very old specimens; in the young which have fallen under my notice there are only two lobes—the first with an oval prolongation in front as an accessory appendage, which becomes longer with age and is at last separated from its lobe, but remaining always smaller and with more rounded angles than the other two lobes. We have in the Public Museum skulls of different ages which clearly prove the gradual separation of the accessory lobe.

In the new species the first lobe of the same molar in the under jaw has a similar but not so well developed prolongation in front, which may also be separated from the main lobe with age.

Both my specimens are very young and show clearly the construction of the skull.

Buenos Aires, August 8th, 1875.

2. On some Stags' Horns from the Thian-Shan Mountains in Central Asia. By W. T. BLANFORD, F.R.S., F.Z.S., &c.

[Received October 28, 1875.]

Amongst the collections brought back by the expedition to Western Turkestan, to which the late Dr. Stoliczka was attached as geologist and naturalist, were several large Stag-horns said to have been brought originally from the Thian-Shan mountains. Like most of the finest and most valuable specimens in the collections, the greater number of these horns were dispersed after Dr. Stoliczka's death, and passed into private hands; but one pair of shed horns, which, although not belonging to the same animal, closely resemble each other in form and size, remain in the collection belonging to the Government, and have been intrusted to me for examination.

I was at first indisposed to give more than a general description of these horns; and in the list of Dr. Stoliczka's mammalian collections which I read to the Asiatic Society of Bengal in August last, I did not attempt to name them. But as the horns are very fine, and appear clearly to show the existence of a species hitherto undescribed, I think I may be justified in giving a fuller account of them, and proposing a name for the animal to which they belong.

The horns are of very large size, each measuring 51 inches in length round the curve; and one is 10·9, the other 10·5 inches in circumference just above the burr. Each shows seven well-formed points or tines, besides which one of the horns has a rudimentary bifurcation on the fourth and fifth tines, counting from the base. The beam is much curved; and, so far as can be judged from the

form of the burr and its probable position with reference to the head, the horns must have bent somewhat towards each other at the tips. The brow and bez antlers are close together, the former slightly exceeding the latter in length; and the bez, again, is a little longer than the royal or third tine. The greatest peculiarity is in the form of the crown. Above the royal the beam curves gently inwards; and some distance above it is bent rather suddenly backwards; and at this



Outer view of the right horn of *Cervus eustephanus*.

point it gives out an anterior tine, which is much the longest of all, being only a little shorter than the upper part of the beam itself. Above this the beam gives out two other tines, successively diminishing in size, the last about equal to the terminal snag; and all these four upper points, with the beam itself, are distinctly compressed, so as to be subpalmate; and all four are in nearly the same plane, so that by looking at the horn with either the beam or the great fourth tine in front, the remainder of the crown can be completely concealed.

The nearest approach in form to these horns with which I am acquainted may perhaps be found in a pair figured by Severtzoff in his 'Turkestanskije Jevotnic,' p. 105, under the name of *Cervus maral*. The number of tines is similar; and there is some resemblance in their form and in the manner in which the beam curves backwards above the royal. These horns also, I believe, came from the Thian-Shan mountains, and they may perhaps belong to the same species. But in Severtzoff's figure the brow and bez antlers are much further apart, the beam appears less curved inwards above the royals, and the tendency to palmation in the crown is wanting, whilst the fourth tine scarcely exceeds the two next in size.

The horns now figured differ widely from those of *Cervus maral* represented in the 'Transactions of the Zoological Society,' vol. vii. p. 336, pl. xxix. The curve of the beam in the former is greater, the brow and bez antlers closer together and different in proportion and direction; and the crown is very dissimilar.

On comparing the Thian-Shan horns with those of *Cervus cashmirianus* and *C. affinis*, even greater differences will be noticed. The horns now described are smoother; the brow and bez antlers are closer together; the beam is bent backward towards the tip, which is not the case in the species from Kashmir and Eastern Tibet; and the form of the crown is utterly different. In *C. affinis* there are said never to be more than two, and in *C. cashmirianus*, as a rule, certainly not above three points above the royal, and there is not the slightest tendency to palmation.

Whatever Mr. Hodgson's *Cervus narayanus** (founded upon a single immature horn) may be, it is evidently something very different from the Thian-Shan species, its chief peculiarity being the great distance apart of the two basal tines.

It appears to me that the horns of the Thian-Shan stag approach those of the Wapiti more than they do those of any Asiatic deer. The general resemblance between the Asiatic stags and *Cervus canadensis* in the form of the antlers has been discussed by many naturalists, and by none more fully than by Mr. Blyth†, who has pointed out that the most important characters in which the horns of the American stag differ from those of the animals found in Eastern Tibet, Kashmir, and Persia are the smoothness of the former, their tendency to flattening or palmation in the crown, their greater subdivision in the upper portion, and the marked backward curvature and want of convergence in the upper part of the beam. Now in all

* J. A. S. B. 1851, vol. xx. p. 392, pl. viii.

† J. A. S. B. 1853, vol. xxii. p. 592; 1861, vol. xxx. p. 185, &c.

these characters the horns procured in Eastern Turkestan are intermediate between those of the Asiatic stags and those of the Wapiti. The horns of the Thian-Shan stag differ from those of *C. canadensis* in being less smooth, more curved inwards towards the end, and in having the brow and bez antlers much nearer together; but they are much nearer in form to the Wapiti horns than to those of *Cervus cashmirianus* and *C. affinis*.

I notice that M. Severtzoff (Turk. Jev. p. 109) divides *Cervus maral*, with which he apparently identifies the Wapiti, into two varieties, the American and Asiatic, and again subdivides each into two races, those of Asia being called *sibirica* and *songarica*. Unfortunately the Russian language, which is employed, renders M. Severtzoff's remarks unintelligible to me, and I cannot say whether the form now described belongs to his *Cervus maral*, var. *asiatica*, *b. songarica*, or not; but I do not think it can be united to the true *Cervus maral*, and I therefore suggest the following name:—

CERVUS EUSTEPHANUS, sp. nov.

Cervus cornibus magnis, sublævigatis, valde curvatis, superne subplanulatis subpalmatisque, apices versus convergentibus atque retro productis, ramos ad septem gerentibus, ramis duobus primis subæqualibus, approximatis, tertio paullo minore, quarto maximo, basin versus planulato, una cum tribus ultimis gradatim deminuentibus subplano.

Hab. in montibus Thian Shan dictis.

My information of the probable locality is derived from Captain Walter, to whom and to Captain Biddulph I am indebted for several notes on the animals of Eastern Turkestan.

3. Notes on *Phænicomanes iora*, Sharpe, and *Abrornis atricapilla*, Blyth. By O. FINSCH, Ph.D., C.M.Z.S.

[Received October 29, 1875.]

A comparison of the bird described and figured by Mr. Sharpe (P. Z. S. 1874, p. 427) under the first-mentioned title with the type of *Iora lafresnayeii*, Hartl. (Rev. Zool. 1844, p. 401) in the Bremen Museum, has convinced me of their identity. We have just received from Malacca a second specimen, which shows the base of the feathers on back and shoulders green, exactly as in the figure given by Mr. Sharpe; so that there cannot be the slightest doubt that these two birds are identical.

As the habitat "Jamaica" for *Phænicomanes* rests only on a dealer's label, and is not verified by any collector's authority; we may believe that there has been a mistake, the certain locality of this species being "Malacca."

A still greater mistake was made by the late Mr. Blyth in describing "*Abrornis atricapilla*" (Ibis, 1870, p. 169) from China,

the type specimen of this species (which I examined in the Leiden Museum) being in fact "*Myiodioides pusillus*, Wils.," a well-known North-American bird. The base of the stand on which the stuffed "type" specimen is placed bears an original label by Dr. Gustav Schlegel, as having been the bird collected by him during his stay at Amoy; but this label has, no doubt, been unfortunately changed by the stuffer, and the ticket of a Chinese specimen fastened to an American bird. It may be added that the name *Abrornis atricapilla* was not given by Temminck, but is in Mr. Blyth's own handwriting.

4. On *Pristorhamphus versteri*, a new Genus and Species of Bird from the Arfak Mountains, New Guinea. By OTTO FINSCH, Ph.D., C.M.Z.S.

[Received October 29, 1875.]

During my recent stay at Leiden the Rijks Museum received a large and rich collection of birds from the Arfak Mountains in New Guinea, obtained by a Dutch traveller whose name I do not know. Besides fine and perfect specimens of the rarer Birds of Paradise (such as *Lophorina*, *Parotia*, *Paradigalla*, *Epimachus*, *Astrapia*), the collection contained, amongst other rare birds, skins of *Eupetes leucostictus*, ScL., *Melirrhophetes*, Meyer, *Pachycephala flavogrisea*, Meyer (which seems to form a peculiar genus), *Trichoglossus moesschenbroekii*, *Carpophaga chalconota*, Salvad., and many others. There was also a sombre bird which Professor Schlegel and I took at first glance for the female of *Melanocharis* (*Dicæum*) *nigra*; but on a closer examination it proved to be quite new, and to form even a new genus. This I propose to call

PRISTORHAMPHUS*, gen. nov.

Allied to *Melanocharis*, ScL., but easily distinguished by the long, strongly rounded tail, and the long slender legs.

The structure of the bill corresponds exactly with that of *Melanocharis*, having the margins of both mandibles serrated, but with the serrations stronger and more visibly apparent, especially with the use of a glass.

The wing resembles that of *Melanocharis*: *i. e.* the fourth and fifth quills are the longest, the third and sixth a little shorter, the first short; but the second, instead of being equal to the seventh as in *Melanocharis*, reaches only the length of the ninth. It must be remarked that the second quill feather in *Melanocharis* shows a slight attenuation at the end of the inner web; but this peculiarity is only to be seen in old males; whereas females and young males have the second quill rounded at the apex as in *Pristorhamphus*.

The tail is strongly rounded and nearly equal to the length of the wing, whereas *Melanocharis* has a nearly even tail, which is much shorter than the wing.

* Deriv. *πίστis*=serra, et *ράμφος*=rostrum.

The tarsus is slender and considerably longer than the middle toe with the claw, whereas in *Melanocharis* the tarsus is only a little longer than the middle toe with claw. Otherwise the form of the feet and legs agree, the tarsus being also caligated in the new genus.

The species I propose to call

PRISTORHAMPHUS VERSTERI, sp. nov.

Whole upper surface, including sides of the head and neck, dull olive-green; quills and tail-feathers brownish black, margined on the outer web narrowly with a brighter, more yellowish olive-green; the external tail-feather on the inner web with a conspicuous large white median spot, which is less extended on the second tail-feather; remiges margined on the basal portion of the inner web narrowly with whitish; chin, throat, and remainder of underparts dull olive-grey, the sides of the breast washed with greenish olive-grey; the middle of the lower breast and vent changing into pale yellowish white; lower wing-coverts and the long axillary feathers silky white, washed with pale yellow; bill and feet black.

	Long. tot. millim.	alk. millim.	rectr. intern. millim.	rectr. extern. millim.	culm. millim.	tars. millim.	dig. int. incl. ung. millim.	
c. 130	62	57	47	10	23	15	<i>Pristorhamphus</i> .	
c. 115	64	43	41	11	16	13 ♂	<i>Melanocharis</i> .	
c. 112	62	40	38	10	15	13 ♀	"	

The collection contains only two specimens of the bird, which are precisely alike.

As they correspond in colour exactly with the female of *Melanocharis nigra*, it may be supposed that they do not exhibit the dress of the old male, which may probably turn out to be very different in coloration. But however this may be, this species will be always distinguishable by the white spot on the inner web of the two external tail-feathers, even without regard to the strongly marked generic differences.

I have great pleasure in naming this new and interesting although modestly coloured bird after my dear friend Mr. F. A. Verster, the meritorious Administrator of the Rijks Museum at Leiden, whose name deserves to be preserved in science and in the galleries of the National Museum of Holland.

5. Characters of six new Polynesian Birds in the Museum Godeffroy at Hamburg. By OTTO FINSCH, Ph.D., C.M.Z.S.

[Received November 8, 1875.]

Besides a bird from the Feejees, which has been collected and forwarded by Mr. Theodor Kleinschmidt, of Nai-Koro, Ovalau, and which proves to be new, I have the pleasure of characterizing five new species of birds from Ponape (or Puynipet), Seniavin group,

Eastern Carolines. Mr. Kubary, the well-known Godeffroyian traveller, has spent more than one year in exploring this island; but unfortunately all his collections were lost by the wreck of the ship.

The birds saved from this accident are referable to about nineteen species, of which no less than five are undescribed. An extended paper on the birds of Ponape will appear in the 'Journal of the Museum Godeffroy,' forming the second part of my "Ornithology of the Pacific Islands." Meanwhile I am anxious to publish the characters of the new species, which may stand as follows.

1. PETROICA KLEINSCHMIDTI, sp. nov.

Upper surface dark brown; sides of head and neck paler; middle of chin and throat whitish; crop and breast light red, remainder of underparts white; quills black-brown on the inner web, with a white cross mark commencing from the fourth quill; the last secondary is margined externally with rusty brown; coverts of the secondaries and upper wing-coverts margined at the end narrowly but distinctly with rusty brown; tail-feathers brownish black, the outermost on the apical half externally white, the second tail-feather only with a narrow white external margin and tip. Bill brownish black; feet brownish.

Long.	alæ.	caud.	culm.	tars.
$3\frac{3}{4}''$	2'' 1'''	15'''	c. 4'''	$7\frac{1}{2}'''$

Hab. Feejee Islands, Tai-Levu or Viti-Levu (*Kleinschmidt*).

Obs. Differs from *P. pusilla*, Peale, from the Navigators', in lacking the white front and large white mark on the wing-coverts.

2. ZOSTEROPS PONAPENSIS, sp. nov.

Upper parts dark olive-brown, wings and tail darker, very narrowly margined externally with lighter brown; lores, sides of head and underparts brownish ashy, the flanks distinctly brownish; a narrow greyish eye-ring; feathers of front with narrow pale shafts. Bill blackish; feet dark plumbeous.

Long.	alæ.	caud.	rostr.	tars.
$3\frac{1}{2}''$	2'' 1'''	16'''	4'''	8'''

Hab. Ponape, Seniavin group (*Kubary*).

Allied to *Z. (Tephros) finschi*, Hartl., but smaller, and the underparts distinct brownish ashy.

3. VOLVOCIVORA INSPERATA, sp. nov.

Male like that of *V. monacha*, H. and F., but without black on the chin and throat, the whole under surface slate-grey; no distinct white margins on the inner web of the primaries, and the outer tail-feathers broadly pointed with slate-grey.

Female totally different from that of *V. monacha*. Head above, nape, and lores brownish grey; remainder of upper parts dark maroon-brown; rump, upper tail-coverts, and the whole under surface

bright dark cinnamon-rufous; quills brownish black, narrowly margined externally with rufous brown; two middle tail-feathers dark rufous brown, remainder brownish black with broad cinnamon-rufous tips.

Long.	alæ.	caud.	culm.	tars.
c. 7"	4"	3"	7 $\frac{1}{4}$ "	11"

Hab. Ponape, Seniavin group (*Kubary*).

4. *MYIAGRA PLUTO*, sp. nov.

Uniform black, with greenish metallic reflections, especially on the head; bill and feet black. Female resembling the male; but the chin and throat are dark brown.

Long.	alæ.	caud.	culm. millim.	latit. rostr. millim.	tars.
5 $\frac{1}{4}$ "	3"	2" 8"	13	8	8"

Hab. Ponape, Seniavin group (*Kubary*).

5. *RHIPIDURA KUBARYI*, sp. nov.

Upper parts dark sooty brown; margin of front lores, cheeks, and ear-coverts brownish black; a white superciliary stripe, and a white stripe from the angle of chin below the cheeks to the ear-region; throat black; crop black, with white apical margins, giving these parts a squamated appearance; vent, anal region and under tail-coverts white; sides and lower wing-coverts slate-grey; tail-feathers brownish black, broadly tipped with white. Bill and feet black.

Long.	alæ.	caud.	culm. millim.	tars. millim.
c. 6"	2" 6"	3"	11	20

Hab. Ponape, Seniavin group (*Kubary*).

6. *APLONIS PELZELNI*, sp. nov.

Obscure sooty brown; head above somewhat darker, lores and front changing into sooty black; wings, tail, upper and lower tail-coverts umber-brown, a good deal lighter than the remaining plumage. Bill and feet black.

Long.	alæ.	caud.	culm.	tars.
6 $\frac{1}{2}$ "	3" 10"	2" 4"	8 $\frac{1}{4}$ "	11 $\frac{1}{2}$ "

Hab. Ponape, Seniavin group (*Kubary*).

6. Notes on the Zoology of Rodriguez.

By J. CALDWELL, C.M.Z.S.

[Received November 8, 1875.]

Having been dispatched on special duty to the Island of Rodriguez immediately after the hurricane-season this year, I was detained nearly three months upon the island, and had an opportunity of making a few notes which may prove interesting, pending more de-

tailed information from the Naturalist who accompanied the Transit-of-Venus Expedition.

Geologically, the island is very similar to Mauritius, of basaltic origin; but a large portion of the south-western part is composed of very ancient upheaved coral, abounding in fissures and caverns large and small, a number of which were minutely explored and dug over by Mr. H. Slater in the latter end of last year.

So effectually had Mr. Slater done his work that though I several times visited the large caverns and some smaller fissures, I only succeeded in getting two Solitaire-bones, and at last I spent a couple of days consecutively in the search and got nothing. The next morning, after another ineffectual search, we were returning home to camp to breakfast, when Sergeant Morris of the Police Force went into a small hole to procure me a few semifossil shells of *Helix lewsheriana* (Morelet, Journal de Conch. 1875, p. 23), and found a magnificent tibia. Of course we all entered, and found the hole to be the entrance of a small but very well formed cavern of three stories formed like steps, none of the chambers being more than 10 feet square, and close alongside one of the large caverns in which a mass of bones had already been found. How it had been overlooked I am at a loss to conjecture.

We remained till half-past four, digging with hands, nails, and pointed sticks in the loose and nearly dry earth; and I obtained the remains of at least 37 birds, besides bones of Tortoises, Gulls (of several kinds) Bats, &c. &c., and many shells of Gasteropoda.

It was this same Sergeant Morris who, under the direction of Mr. George Jenner, had already procured for Mr. Edward Newton the handsome collection of Solitaire-bones on which he and his brother prepared the memoir published in the Phil. Trans. for 1869, vol. clix. Morris is an enthusiastic naturalist in his way; and had he, at the time when he collected these bones, had the slightest training, I have no doubt many perfect specimens would have been obtained, by keeping separate the bones which apparently belonged to any one bird.

Out of the number of birds I have mentioned, I got that day a skeleton all but complete. I suppose it to be a female, as the fighting bones are not largely developed, although the bird is evidently mature. On one side there are seven ribs complete; but I find no trace of the articulation of the eighth dorsal rib (see Messrs. Newton's paper, Phil. Trans. vol. clix. 1869, p. 334), though in another specimen there is about $\frac{3}{4}$ of an inch of this rib existing on each side. The two pubic bones are in very good preservation; and though, unfortunately, one was broken off in taking the bones from the earth, I have been able to reunite it perfectly to the pelvis. The posterior extremities of these bones in different specimens present most singular variations. The pelvis is quite complete on the right side; but the posterior end is missing on the left; I am not sure, however, that I did not put it away at the time and that it will not be found: the caudal extremity is incomplete; but I found several detached bones, which I have not attempted to put in place.

It should be remarked that the ununited skeleton has not got the atlas bone. It was broken and so delicate, I did not dare to mount it.

The sternum is very complete, the outline being perfect except on the right side, where the lateral process is broken off, though I am not yet sure I have not got the fragment put aside. The furcula is unbroken, and very small when compared with the size of the bird. The head is very complete in every respect, and the cervical and dorsal vertebræ, on the whole remarkably well preserved, as are also the wing- and leg-bones: the feet are quite complete.

A second skeleton of a male (?) bird is far from being so perfect as the one just described, but still will make a capital specimen. One side of the sternum is complete, the head very nearly so; but the pelvis is somewhat damaged, though one of the pubic bones is in place. The vertebræ of the neck are not in such good order as in the other one.

I do not know whether the naturalists inquired into the probable means of existence of the Solitaire. To one of local experience the merest view of the ground would suggest that they lived in the midst of abundance of food, and that their extinction cannot be ascribed to deficiency of nourishment, nor to human agency, as the population was too sparse, and the place where their remains are now found too remote to be more than occasionally hunted; and it is well established that it is only very lately that many of the caverns in which these remains have been found have been discovered. Neither can it be granted that the bones were washed into the caverns and thus buried in the floors, though doubtless such was the case in some instances, especially in some of those explored by Mr. Slater. The cave which I explored was in a sort of cliff, and the entrance about eight feet above the bed of the ravine, which ultimately became a cavern; and there were no marks whatever of any action of water beyond the filtration from the roof in a few spots. I can only gather therefore that these birds resorted to these caves in considerable numbers and appear to have frequented them, although this hypothesis is opposed to Leguat's statement, as he expressly mentions that the birds were not gregarious, but solitary.

The hypothesis that they got into the caves to avoid fires is equally untenable. Fire could not take place in this coral country, as there is no grass to propagate it, and the trees are very wide apart.

Messrs. Newton's theory of swine having destroyed them is equally, in my view, erroneous; pigs would get nothing to eat, nor water to drink, and would scarcely leave the ravines far away from this spot, where abundance of guava, raspberries, *Colocasia*-roots, and other succulent food in which they delight exist, and where they could (as at present) wallow in the muddy pools.

I can only attribute their apparently sudden and simultaneous disappearance to some terrible hurricane or other disturbing cause which led them to these places for shelter; for they are found in many places where no bird deprived of the faculty of flight, and with any instinct, would resort to, viz. withdrawn into nooks, cran- nies, and fissures whence they could, in many instances, scarcely get

out again. How, under any other theory, can the discovery in similar places of remains of Gulls and Tortoises be explained? The effect of a hurricane such as I have described, is to shake off every fruit, seed and leaf from the trees. The south-western corner of Rodriguez would be peculiarly exposed to its violence, and consequently the animals and birds living on such food would literally die of starvation.

I omitted to mention that I got, both with the mounted bird and the male bird, the stones mentioned by Legnat as existing in the gizzard. In each case they were found on lifting the sternum and in the middle of the ribs. They are basaltic pebbles with rough angles and surfaces, and no stone of similar kind is to be found within about two miles from the caverns. I got four in all, but only two of which I could identify the birds they belonged to.

By last mail, I sent Mr. Edward Newton a specimen of the nearly extinct Rodriguez Parrot*. It is probably the Blue Parrot of Messrs. Newton's paper, p. 357; and I have seen several of them, though I never could get near one myself.

I hope shortly to hear of and procure a specimen of the long Lizard, called Coulevec, also supposed to be extinct, but which I imagine still exists. If one is still to be got, I am sure of it, as I have offered a good reward.

In Malacology there is a very large and interesting field to explore, though probably most of our Mauritian species are also found there. I got a very handsome collection. As was to be expected, the land-shells are peculiar. Remarks on these subjects, I must defer for the present, as the mail is just starting.

7. List of Land and Freshwater Shells collected by Mr. Osbert Salvin in Guatemala in 1873-74. By Dr. E. von MARTENS, C.M.Z.S.

[Received November 3, 1875.]

1. *GLANDINA FUSIFORMIS*, Reeve, with var. β , Crosse et Fischer.

Hab. Coban, Vera Paz.

2. *GLANDINA LIGNARIA*, Reeve (non Crosse et Fischer).

Hab. Coban, Vera Paz.

3. *GLANDINA MONILIFERA*, Pfr.

Hab. Coban, Vera Paz.

4. *STREPTOSTILA NIGRICANS*, Pfr.

Hab. Coban, Vera Paz.

* *Palæornis exsul*, Newton, Ibis, 1872, p. 33.

5. *STREPTOSTILA DELATTREI*, Pfr.*Hab.* Coban, Vera Paz.6. *STREPTOSTILA BOCOURTI*, Crosse et Fischer.*Hab.* Coban, Vera Paz.7. *EUCALODIUM WALPOLEANUM*, Crosse et Fischer.*Hab.* Coban, Vera Paz.8. *EUCALODIUM DECOLLATUM*, Nyst.*Hab.* Coban, Vera Paz.9. *CYLINDRELLA POLYGYRA*, Pfr.*Hab.* Coban, Vera Paz.10. *MORELETEA EURYOMPHALA*, Pfr.*Hab.* Coban, Vera Paz.11. *HELIX GHIESBREGHTI*, Pfr.*Hab.* Coban, Vera Paz.12. *HELIX EXIMIA*, Pfr.*Hab.* Coban, Vera Paz.13. *HELIX SARGI*, Crosse et Fischer (Journ. Conch. 1872, pl. ix. fig. 2).*Hab.* Coban, Vera Paz.14. *HELIX TRIGONOSTOMA*, Pfr. var. γ , Crosse et Fischer.*Hab.* Vicinity of the city of Guatemala.15. *BULIMULUS ALTERNANS*, Beck.*Hab.* Vicinity of the city of Guatemala.16. *BULIMULUS CASTUS*, Pfr.*Hab.* Coban, Vera Paz.17. *BULIMULUS JONASI*, Pfr.*Hab.* Coban, Vera Paz.18. *BULIMULUS PETENENSIS*, Morelet.*Hab.* Vera Paz.19. *CYCLOTUS DYSONI*, Sow.*Hab.* Coban, Vera Paz.20. *CYCLOPHORUS PONDEROSUS*, Pfr.*Hab.* Coban, Vera Paz.21. *CYCLOPHORUS TEXTURATUS*, Sow.*Hab.* Coban, Vera Paz.

22. MEGALOMASTOMA (TOMOCYCLOS) SIMULACRUM, Morelet.

Hab. Coban, Vera Paz.

23. CHONDROPOMA RUBICUNDUM, Morelet.

Hab. Coban, Vera Paz.

24. HELICINA VERNALIS, Morelet.

Hab. Coban, Vera Paz.25. HELICINA ROSTRATA, Morelet (*salvini*, Tristram).*Hab.* Coban, Vera Paz.

26. HELICINA AMÆNA, Pfr.

Hab. Coban, Vera Paz,

27. HELICINA TROSULA, Morelet, var.

Hab. Vicinity of the city of Guatemala.

28. HELICINA ANOZONA, sp. n.

Testa globosa, spiratim subtiliter striata, nitida, carneo-flavescent, zona suturali pallide flava insignis; spira conoidea, acutiuscula; anfractibus 5, convexiusculis, ultimus subinflatus, antice non descendens; apertura parum obliqua, late semiovalis; columella brevis, subrecta, tuberculo terminata; peristoma incrassatum, latiusculum, reflexum, læte luteum; callus basalis circumscriptus, mediocris, crassus.

Diam. maj. 8, min. 7, alt. 7, apert. alt. 5, lat. $3\frac{1}{2}$ millim.

Hab. Vicinity of Coban. Central America (*Salvin*).

Similar to *H. fulva*, D'Orb, from Bolivia, and to *H. rotunda*, D'Orb, from the West Indies; the first is more flattened, of larger size, and differently coloured; the latter has no spiral sculpture, and a much thinner peristome.

29. SCHASICHILA PANNUCEA, Morelet.

Hab. Coban, Vera Paz.*Freshwater Shells.*

30. PHYSA NITENS, Phil.

From a small stream running into the lake of Dueñas above Santiago, Zamora. 31st Aug. 1873.

31. PLANORBIS TENUIS, Phil.

Hab. Dueñas.

32. AMPULLARIA FASCIATA (Lam.), Reeve.

Hab. Coban, Vera Paz.

8. On the Eared Seals of the Islands of St. Paul and Amsterdam, with a Description of the Fur-Seal of New Zealand, and an attempt to distinguish and rearrange the New-Zealand *Otariidæ*. By J. W. CLARK, F.Z.S.

[Received December 6, 1875].

(Plates LXX.—LXXII.)

When I began this paper I expected that it would amount to no more than a description of the four skulls from St. Paul's Island which I exhibit to night, with a few notes on the stuffed specimens from the same locality preserved in the Museum of the Jardin des Plantes, Paris, where, thanks to the kindness of my friends Professor Gervais and Professor Milne-Edwards, I was allowed, last autumn, to study the specimens that had been lately acquired. A fortnight ago, however, my friend Dr. Hector was so good as to present to the Cambridge Museum a young Fur-Seal of New Zealand preserved in spirit, and to lend me, with the concurrence of Dr. Günther, two adult skulls of the same species, male and female. He also, with great generosity, put into my hands the notes and measurements he had taken when the animals were captured; so that, thanks to him, I am able to lay before the Society much new and valuable information respecting the southern *Otariidæ*, with which we are still so imperfectly acquainted.

The specimens I have to exhibit are:—four skulls from the Island of St. Paul or Amsterdam, I am unable to say which; of the Fur-Seal of New Zealand, a young female in spirit, and two adult skulls, of one of which the snout has fortunately been preserved; and a young skull from Campbell Island lent me by Professor Gervais.

I propose to preface my description of these by a collection of the notices of "Seals" that are profusely scattered through the early voyages of exploration to the South Sea and New Zealand, in the hope of clearing up to a certain degree the difficult question of the number and synonymy of the species still existing on the Australian coasts, using the term "Australian" to designate Australia proper, New Zealand, Tasmania, and the adjacent islands. These notices are peculiarly valuable for my present subject, as the destruction of Seals has been going on steadily since the first discovery of the country.

HISTORICAL EVIDENCE.

I. *Islands of St. Paul and Amsterdam.*

These are two volcanic islands in lat. $37^{\circ} 52' S.$, long. $77^{\circ} 35' E.$, discovered by one Vlaming, a Dutchman, in 1697. It would appear that the most southern of the two is now called St. Paul's; but the islands have changed names more than once*. They are nearly equidistant from the Cape of Good Hope and Australia, and lie only

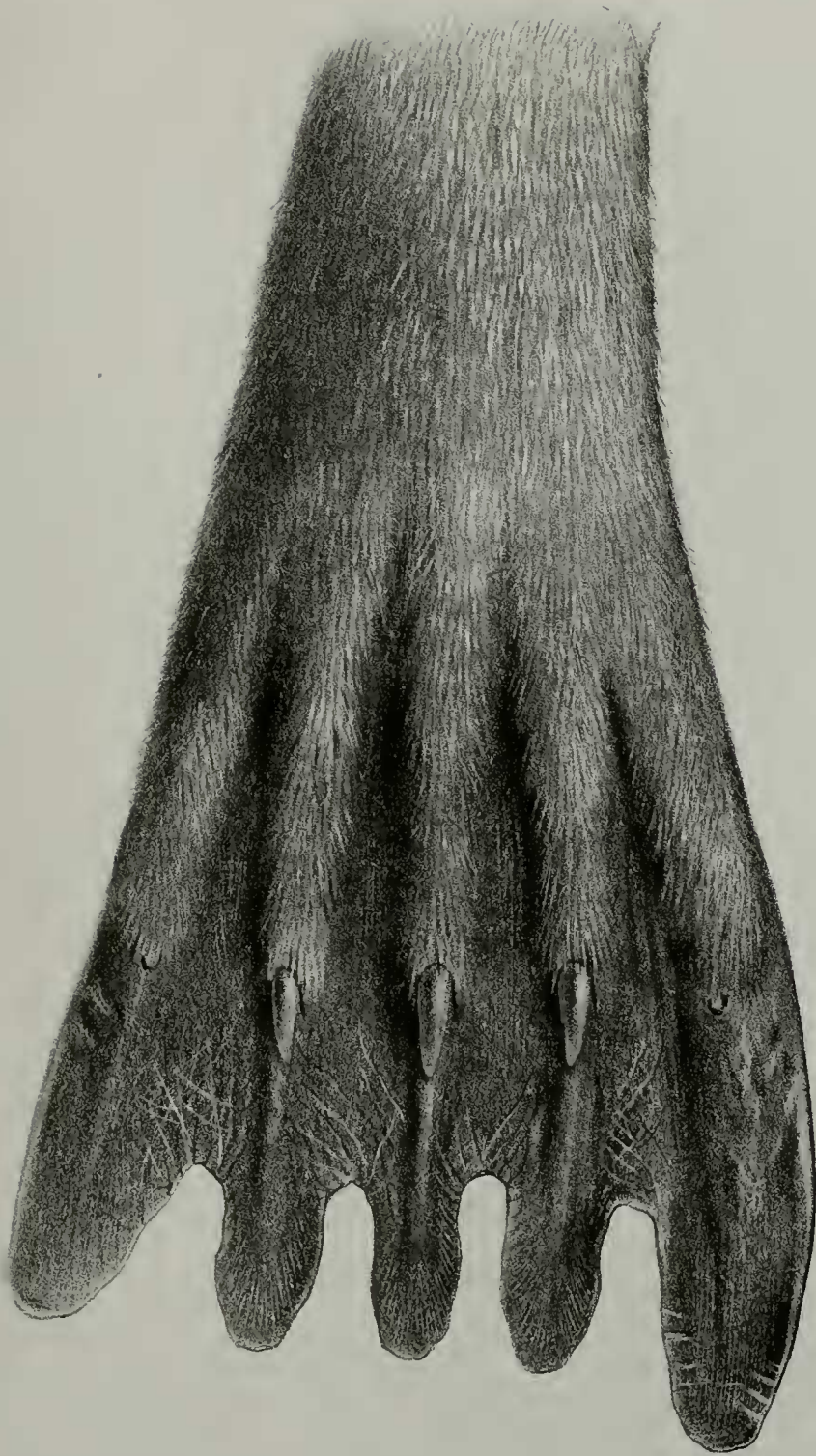
* See Vancouver's Voyage, 4to, London, 1798, i. p. 26.



J Smit lith

M&N Harhart imp

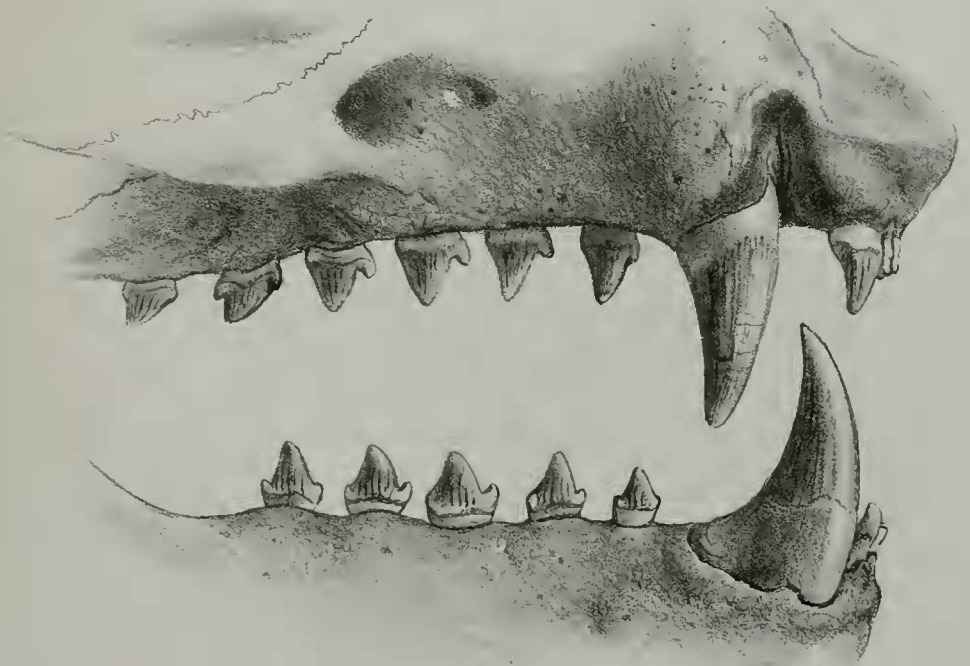
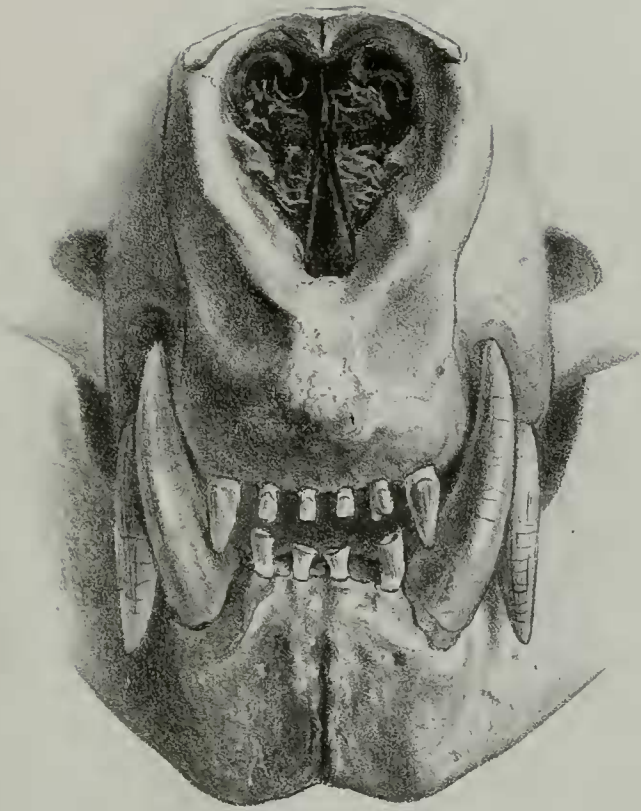
RIGHT MANUS OF OTARIA FORSTERI.



J Smit lith.

M & N Hanhart imp.

RIGHT PES OF OTARIA FORSTERI.



J.Smit lith.

M&N Hanhart imp.

DENTITION OF OTARIA FORSTERI.

a little to the north of the usual course of vessels bound to the latter country. In consequence they have, no doubt, been frequently visited; and in most voyages some reference, usually a slight one, is made to them*; but few detailed accounts are to be met with. In the very interesting narrative of Captain Cox's voyage, however, the following description occurs:—

“At half past one in the afternoon of the 29th [May, 1789], we saw the Island of Amsterdam, bearing north-east by east; and at half past eight at night came to an anchor As in all probability the *Mercury* is the first English vessel that ever anchored at this Island, a particular description of it may be interesting to the curious. . . .

“On our first landing, we found the shore covered with such a multitude of Seals, that we were obliged to disperse them before we got out of the boat; there were besides several Sea-lions or wolves, of a most enormous size and tremendous appearance, one of them that we measured being twenty-one feet in length, and nearly as much in circumference. These animals are of a dirty white, or stone colour, very inoffensive, and so unwieldy and lazy as not to move at the approach of any one, unless attacked; when they retreated towards the sea backwards, with their mouths open and shaking their heads, but without making any noise. Some of them were very difficult to kill; for notwithstanding they had received several musket-balls in their heads and down their throats, and were wounded in different parts of the body with half-pikes, so that the blood came from them in torrents, yet they found means to escape into the sea; one of them, however, was killed at the first shot with a single ball, which, I suppose, penetrated the brain. The Sea-lions greatly resemble the Seal in shape, and, like them, are furnished with four feet or fins; the two hindermost of which they sometimes carry erect so as to resemble a tail.

* * * * *

“It being very clear early in the morning, we plainly discerned the Island of St. Paul's from the quarter-deck, bearing north north-east, distant seventeen leagues.

* * * * *

“We procured here a thousand Seal-skins of a very superior quality while we remained at the Island of Amsterdam, besides several casks of good oil for our binnacles and other purposes”†.

Cox's Voyage was not published till 1791; but attention had been already drawn by others to the profit that might be derived from these islands, as is shown by a letter from the master of the ‘*Britannia*,’ the first vessel that ever made a whaling-cruise in the South Sea, to his owners the Messrs Enderby, dated Nov. 29, 1791, narrating an attempt he had made “to run down to it [Amsterdam

* As in Flinders's ‘*Voyage to Terra Australis*,’ 4to, London, 1815, i. p. 46.

† ‘*Observations &c., made during a Voyage to the Islands of Teneriffe, Amsterdam, &c., in the brig Mercury, commanded by Henry Cox, Esq., by Lieut. George Mortimer*, 4to, London, 1791, p. 10.

Island] to discover whether the sealing business might not have been carried on there" *.

In the same year they were sighted by D'Entrecasteaux, who commanded the first expedition sent out to search for La Pérouse. One of the islands was on fire, caused, it was supposed, by sealers, "as an American vessel had landed a party of men to obtain oil from the seals, which are very numerous there." The expedition did not land; but they "saw plenty of seals swimming among masses of seaweed, about three-quarters of a mile from the coast" †.

In February 1773, the vessels conveying Lord Macartney to China touched there. They found five men on the island, three French and two English, who were engaged in collecting Seal-skins, 25,000 of which they were bound to supply in a given time for the Canton market. "One of them, an Englishman, had been there for some time on a former adventure."

"The seals," says the narrator‡, "whose skins are thus an article of commerce, are found here in greater numbers in the summer than in the winter, when they generally keep in deep water, and under the weeds, which shelter them from the inclemency of the weather. In the summer months they come ashore, sometimes in droves of eight hundred or a thousand at a time, out of which about a hundred are destroyed, that number being as many as five men can skin and peg down to dry in the course of a day. Little of the oil which these animals might furnish is collected, for want of casks to put it in; part of the best is boiled, and serves those people instead of butter. The seal of Amsterdam is the *Phoca ursina* of Linnaeus. The female weighs, usually, from seventy to one hundred and twenty pounds, and is from three to five feet in length; but the male is considerably larger. In general they are not shy; sometimes they plunge into the water instantly upon any one's approach, but at other times remain steadily on the rocks, bark, and rear themselves up in a menacing posture; but the blow of a stick upon the nose seemed sufficient to dispatch them. Most of those which come ashore are females, in the proportion of more than thirty to one male. Whether, in those animals, nature has fixed on such an apparent disproportion between the two sexes, or whether, while the females have occasion to seek the shore, the males continue in the deep, has not hitherto been ascertained by any observations here. In the winter season great numbers of Sea-lions (*Phocæ leoninæ*), some eighteen feet long, crawl out of the sea upon the causeway, making a prodigious howling noise . . . It is thought that both Seals and Sea-lions are somewhat less numerous here of late, since the place has been frequented by vessels for the purpose of getting their skins."

H.M.S. *Megæra* was run ashore on St. Paul's, June 19, 1871.

* 'An Historical Journal of the Transactions at Port Jackson, &c.,' by John Hunter, Esq., 4to, London, 1793, p. 557.

† 'Relation du voyage à la recherche de La Pérouse, pendant les années 1791-2, par le Citoyen Labillardière, un des Naturalistes de l'Expedition' (2 vols. 4to. Paris, 1801), vol. i. p. 110.

‡ 'An authentic account of an Embassy from the King of Great Britain to the Emperor of China,' by Sir G. Staunton (2 vols. 4to, London, 1797), i. p. 210.

It was found to be inhabited by three French Malay fishermen, whose employers resided at Bourbon. They were visited every three or four months, and the fish they had caught and salted taken away. A view of the island will be found in the 'Illustrated London News' for August 19, 1871; but I cannot learn that any notes were taken of the zoology.

St. Paul's was selected by the French Government as a station for observation of the transit of Venns on Dec. 9, 1874. A good geologist, M. Charles Vélain, Attaché à la Faculté des Sciences, Paris, was sent out with the expedition. He has given a most interesting description of the geological conformation of both the islands. St. Paul's is a vast crater, like that of Mauna-Loa in Hawaii, one side of which has been broken down; and the sea rushing in, has formed a splendid natural harbour, with, however, rather a dangerous bar across the mouth. It is interesting to note that at the date of Lord Macartney's visit this bar stretched across the harbour so much above high-water mark as to be termed a "causeway," and the volcanic forces were evidently much more active than they are at present: smoke was seen to issue from many parts of the island.

Amsterdam Island, which M. Vélain believes to have been almost entirely unexplored up to the present time, on account of the dense vegetation with which it is covered, is volcanic, like St. Paul's, but of a totally different shape, being a square mountain mass with precipitous sides, from 1500 to 1800 feet high. "Otarias (*Otaria delalandei*)," he says, "live at St. Paul's Island and, above all, at Amsterdam Island in considerable herds" *.

II. *New Zealand, Australia, and the adjacent Islands.*

Captain Cook, in his first voyage, off Cape Egmont, on the east coast of the North Island of New Zealand (Jan. 15, 1770), "saw a Sea-lion rise twice near the shore, the head of which exactly resembled that of the male which has been described in the account of Lord Anson's voyage" †.

This may be supplemented by his account of what he saw at the same place on his second visit, June 1773:—

"In our excursion to the East, we met with the largest Seal I had ever seen. It was swimming on the surface of the water, and suffered us to come near enough to fire at it; but without effect; for, after a chase of near an hour, we were obliged to leave it. By the size of this animal it probably was a Sea-lioness. It certainly bore much resemblance to the drawing in Lord Anson's Voyage; our seeing a Sea-lion when we entered this Sound in my former voyage increaseth the probability; and I am of opinion, they have their abode on some of the rocks, which lie in the Strait, or off Admiralty Bay" ‡.

* "Les Otaries (*Otaria delalandei*) vivent à Saint-Paul, et surtout à Amsterdam en troupeaux nombreux" (Comptes Rendus de l'Académie, 1875, p. 998).

† Hawkesworth, 'An Account of the Voyages &c.' vol. ii. p. 385.

‡ Voyage towards the South Pole and round the world, Fourth Edition, vol. i. p. 124.

On the same voyage, immediately after casting anchor in Dusky Bay (at the south-east corner of the Middle [South] Island of New Zealand) on March 26, 1773, he records the presence of Seals on some rocks in the harbour, laid down in his chart as "Seal Isles."

"Some of the gentlemen killed a seal (out of many that were upon a rock), which made us a fresh meal" *.

April 2.—"In our way, we touched at the seal-rock, and killed three seals, one of which afforded us much sport" (p. 73).

May 10.—"Went out in the boats to the rocks, which lie at this entrance of the bay, to kill seals. The weather was rather unfavourable for this sport, and the sea ran high, so as to make landing difficult; we, however, killed ten; but could only wait to bring away five, with which we returned on board" (p. 91).

Again, "The only amphibious animals are seals. These are to be found in great numbers about this bay, on the small rocks and isles near the sea-coast" (p. 96).

The explorations of Captain Cook were succeeded in the years 1795-99 by those of George Bass, surgeon of the 'Reliance,' and Matthew Flinders, then a midshipman. They surveyed the coast of Australia south of Port Jackson, and discovered the strait separating Australia from Van Dieman's Land,—sometimes independently, and sometimes together.

Bass found the rocks of Cape-Barren Island, off the north coast of Tasmania, "covered with fur-seals of great beauty. This species of seal seemed to approach nearest to that named by naturalists the Falkland-Island Seal" †.

Again, of one of the islands off the "Patriarchs," not far distant from the above, after describing the land portioned out among the birds, we read, "the rest was appropriated to the seals, who seemed to be the lords of the domain. Mr. Bass remarked with surprise, that though the principal herd scampered off like sheep, as is usual on the first approach, yet the males, who possessed a rock to themselves, where they sat surrounded by their numerous wives and progeny, on his drawing near them, hobbled up with a menacing roar, and fairly commenced the attack, while the wives seemed to rest their security upon the superior courage and address of their lord; for instead of retreating into the water in the utmost consternation, they only raised themselves upon their fore fins, as if ready for march, keeping their eye upon him, and watching the movements of his enemy.

* * * * *

"The seal appeared to branch off into various species. He did not recollect to have seen them precisely alike upon any two islands in the Strait. Most of them were of that kind called by the sealers Hair-seals; but they differed in the shape of the body, or of the head, the situation of the fore fins, the colour, and very commonly in the voice, as if each island spoke a peculiar language" ‡.

* Voyage towards the South Pole, &c., 4th ed., vol. i. p. 68.

† 'An account of the English Colony in New South Wales, &c.,' by Lieut. Col. Collins (2 vols. 4to, London, 1802), i. p. 158.

‡ *Ibid.* p. 192.

Flinders* gives a vast number of notices respecting the Seals he found on the different islands in the Strait. He seems to have taken a naturalist's and not a speculator's interest in them.

Feb. 16, 1798.—Large Hair-Seals were met with on Battery Island—a rock in the channel between Cape-Barren Island and the southern islands. The rocks of Clarke's Island “were also frequented by hair-seals; and some of them (the old males) were of an enormous size and extraordinary power. I levelled my gun at one, which was sitting on the top of a rock with his nose extended up towards the sun, and struck him with three musket-balls. He rolled over, and plunged into the water; but in less than half an hour had taken his former station and attitude. On firing again, a stream of blood spouted forth from his breast to some yards distance, and he fell back senseless. On examination, the six balls were found lodged in his breast; and one, which had occasioned his death, had pierced the heart: his weight was equal to that of a common ox” (vol. i. p. cxxviii).

On Cone Point “the number of seals exceeded every thing we had, any of us, before witnessed; and they were smaller, and of a different species from those which frequented Armstrong's Channel. Instead of the bull-dog nose, and thinly set, sandy hair, these had sharp-pointed noses, and the general colour of the hair approached to a black: but the tips were of a silver-grey, and underneath was a fine, whitish, thick fur. The commotion excited by our presence, in this assemblage of several thousand timid animals, was very interesting to me, who knew little of their manners. The young cubs huddled together in the holes of the rocks, and moaned piteously; those more advanced scampered and rolled down to the water, with their mothers; whilst some of the old males stood up in defence of their families, until the terror of the sailors' bludgeons became too strong to be resisted. Those who have seen a farm-yard, well stocked with pigs, calves, sheep, oxen, and with two or three litters of puppies, with their mothers, in it, and have heard them all in tumult together, may form a good idea of the confused noise of the seals at Cone Point. The sailors killed as many of these harmless and not unamiable creatures as they were able to skin during the time necessary for me to take the requisite angles; and we then left the poor affrighted multitude to recover from the effect of our inauspicious visit” (p. cxxix.).

“The hair-seal appears to frequent the sheltered beaches, points, and rocks: whilst the rocks and rocky points exposed to the buffettings of the waves are preferred by the handsomer and superior species, which never condescends to the effeminacy of a beach. A point or island will not be greatly resorted to by these animals, unless it slope gradually to the water, and the shore be, as we term it, steep to. This is the case with the islet lying off Cape Barren,

* A Voyage to Terra Australis, in the years 1801, 1802, and 1803, by Matthew Flinders (2 vols. 4to, London, 1814). The introduction, pagged in Roman numerals, contains an excellent account of the previous explorations of himself and others.

and with Cone Point: with parts of the Passage Isles, and the south end of Clarke's Island; and at these places only did I see fur-seals in any number" (p. cxxxiii.).

Waterhouse Island (on the north coast of Tasmania, west of Furneaux's Island) "was almost covered with sea-birds and hair-seals" (p. cli.).

At Three-Hummock Island (at the west extremity of the Strait) Mr. Bass landed. "He had been obliged to fight his way up the cliffs of the island with the seals, and when arrived at the top, to make a road with his clubs among the albatrosses. . . . The seals were of the usual size, and bore a reddish fur, much inferior in quality to that of the seals at Furneaux's Island" (p. clxxii.).

In the "Recherche Archipelago" (south-west coast of Australia), says Flinders on his voyage in 1801, "all the islands seem to be more or less frequented by seals; but I think not in numbers sufficient to make a speculation from Europe advisable on their account; certainly not for the China market, the seals being mostly of the hair kind, and the fur of such others as were seen was red and coarse" (i. p. 92).

On Investigators Islands "the beaches were frequented by seals of the hair kind. A family of them, consisting of a male, four or five females, and as many cubs, was lying asleep at every two or three hundred yards. Their security was such, that I approached several of these families very closely, and retired without disturbing their domestic tranquillity or being perceived by them" (p. 125).

Kangaroo Island abounded with Kangaroos and Seals. "They seemed to dwell amicably together. It not unfrequently happened that the report of a gun fired at a kangaroo near the beach, brought out two or three bellowing seals from under bushes considerably further from the water side. The seal, indeed, seemed to be much the most discerning animal of the two; for its actions bespoke a knowledge of our not being kangaroos, whereas the kangaroo not unfrequently appeared to consider us to be seals" (p. 172).

The explorations of Péron, who visited Australia at the same time as Flinders, have left us several valuable notices on the Seals and Otarias observed by him. It is much to be regretted that his memoir of the family never appeared, and that his MSS. have been, so far as I know, lost sight of*.

It is beside my present purpose to do more than refer to his very remarkable account of the Sea-elephants that he found on King Island in Bass's Strait, and nowhere else. Flinders had already remarked an animal there which may, I feel sure, be referred to this species†.

On visiting Kangaroo Island (called by the French Isle Decrès) he found "a new species of the genus *Otaria* (*O. cinerea*, N.), which attains the length of 9 to 10 feet. The hair of this animal

* After establishing the genus *Otaria* for "les Phocacés à auricules," he speaks of "un travail très-étendu que je prépare sur la famille" ("Voyage de Découvertes aux Terres Australes. . . . pendant les années 1800-1804," par Péron et Freycinet [3 vol. 4to, Paris, 1816], ii. p. 37).

† *l. c.* i. p. 206; Péron, *l. c.* chap. xxiii.

is very short, hard, and coarse; but its leather is thick and strong, and the oil prepared from its fat is as good as it is abundant. For both these reasons it would be highly advantageous to fish this animal, as also some other species of Seals of smaller size that are found together with the former in great numbers on these coasts, and which possess fur of good quality" (ii. p. 77).

At an island called by the French Isle Eugène, in the Nuyts Archipelago, and which is, I believe, identical with the St.-Francis Island of Flinders and the English maps, he finds a new species "of the genus I have thought it right to establish under the name of *Otaria*. They attain the length of 8 to 9 feet, and are especially distinguished by a large white spot on the middle and upper surface of the neck: from this character I have described this new seal under the name of *Otaria albicollis*, N. Individuals of this beautiful species have their fore limbs closer together than the other amphibians (!) of the same family; they are moreover far more active and less timid than the others" *.

Captain Turnbull, writing in 1810†, mentions that "when the sealing flagged in some degree at Bass's Straits, they [the colonists] turned their attention to New Zealand, where the seals were known to abound. Every bay, creek, and river was examined by them; and the fruit of their labour most amply recompensed them" (p. 505). . . "The intercourse between the colony of New South Wales and the Fejee Islands to the northward has been extremely active of late years. Several vessels fitted out at that colony obtained cargoes there amounting to 46,000 seal-skins" (p. 509) . . . "In 1811 some resolute adventurers, in pursuit of new objects, penetrated as far as lat. 54° 45' S. and long 159° 42' E., where they discovered an island. . . which they named Macquarrie Island Some time previous to this another island had been discovered in the latitude of 52° 41' S., long. 169° E., which the discoverer named Campbell's Island. The first of these adventurers, and their immediate successors who arrived at Macquarrie Island, killed not less than 80,000 seals" (p. 515).

The French expedition sent under Dumont D'Urville in the 'Astrolabe,' between the years 1826 and 1829, to the South Seas, coasted the south of Australia. Two species of *Otaria* have been described by the naturalists of the voyage‡, *Otaria cinerea* and *O. australis*.

As regards the Seals of the Aucklands I must refer to my own paper, P. Z. S. 1873, p. 750.

Lastly, the French Government having determined to send an expedition to Campbell Island§ to observe the transit of Venus, an excellent naturalist, M. Filhol, was selected to accompany it. He

* *l. c.* p. 118. "Ont les pieds antérieurs moins éloignés de la poitrine que la plupart des autres amphibies de la même famille."

† 'A Voyage round the World in the years 1800-1804,' by John Turnbull. Second edit. 4to, London, 1813, pp. 505 *et seq.*

‡ Zoologie, vol. i. pp. 89-99.

§ For an account of Campbell Island see Sir John Ross's Antarctic Voyage, i. p. 154.

has sent home a large series of skulls and skeletons of *Otaria hookeri*, ♀, ♂, and young, together with a series of *Stenorhynchus leptonyx*, which I was allowed to examine at Paris last September. One of the young skulls I exhibit to-night. I think there is no doubt, after comparison of it with a young skull of *Otaria hookeri* from Auckland Island, lent me by Dr. Hector, that it is referable to that species, which varies exceedingly, as I have already shown, according to age and sex.

From these accounts I estimate that the following species exist, or once existed:—

Amsterdam Island and St. Paul's Island.

1. A Sea-elephant, called "Sea-lion" by Captain Cox and Sir G. Staunton, a name universally given in the old voyages to that animal, as I have shown elsewhere*.

2. An *Otaria* with abundant fur.

New Zealand and Australia.

1. A "Sea-lion," seen off Cape Egmont by Cook on two occasions, and remarked by him to resemble the Sea-lion of Anson's voyage. This, therefore, I take to have been a Sea-elephant, though Péron found them, only 32 years later, restricted to King Island in Bass's Straits.

2. One or more species of Hair-Seal, probably of the genus *Stenorhynchus*, which is still abundant on the New-Zealand coast, and of which it would appear that there is more than one species†.

3. The *Otaria* of Dusky Bay, described by Forster, and which has since been recognized as "the Fur-seal" *par excellence* of New Zealand. This is probably the same species as that with "sharp-pointed nose, black hair, and fine whitish fur" seen by Bass and Flinders on Cape-Barren Island and elsewhere, between Australia and Van Diemen's Land.

4. An *Otaria* observed by Flinders and Péron on Kangaroo Island, and called by the latter *O. cinerea*. To Péron's account may be added Flinders's remark that it "bore a reddish fur."

5. An *Otaria* called *O. albicollis*, from the white patch on the neck.

Macquarrie Island.

A Fur-Seal, of which we have as yet received no specimens.

Campbell Island.

1. A Fur-Seal, apparently.

2. *Otaria hookeri*,

3. *Stenorhynchus leptonyx*, } as determined by the French.

Auckland Island.

1. *Otaria hookeri*.

2. A Fur-Seal.

3. *Stenorhynchus leptonyx*.

* 'Nature,' Sept. 2, 1875, p. 367, and 'Contemporary Review,' Dec. 1, 1875.

† Trans. New-Zealand Inst. ii. p. 29.

I now proceed to attempt to reconcile these notices with the recorded species: and I will take first the Fur-Seal of New Zealand, the true name for which I shall show to be *Otaria forsteri*.

Dr. Hector's notes (taken when the specimens exhibited were killed) are as follows:—

1874. "On January 6, when on board the New-Zealand Government gun-boat 'Lima,' I got eleven specimens, young and old, on the group of rocks called 'the Steeples,' off Cape Foulwind, west coast of Nelson. None of the specimens are very old; and the females are suckling young of a few weeks age. Two males and two females, supposed to be in the third year, were selected for measurement and preservation, and also several young ones. The skeleton of one of the males is now in the British Museum, the skull and skin of one female, and the nose of specimen A. Two young specimens, also in spirit, and one stuffed and set up (but this latter was obtained at 'the Snares' *) have also been placed in the British Museum."

A. Male (fig. 1, p. 660). Skeleton in British Museum.

	in.	lin.
"Total length	83	0
Length of snout from eye	5	5
" " mouth	3	0
" of gape	3	0
" from eye to base of ear-conch	4	0
" from ear-conch	1	8
Width between eyes	4	0
Girth at shoulder	68	0
" vent	36	0
Distance of commencement of anterior flipper from snout	31	0
Length of flippers	20	0
Width	8	8
Distance of generative organs from snout	56	0
Length of hind flippers	15	0
Width	8	0

"Snout conical, produced, nose overhanging the nostrils, which are inferior, valvular, and separated by a deep sulcus. About 20 white bristles.

"Colour on back—long hairs black and white, mixed with lighter brown under-fur. Beneath, hair black, short, with a dark brown under-fur. Nose and flippers naked and jet-black.

"Anterior flippers with first finger longest: five fingers, all with deeply immersed rudimentary nails; internal finger half the length of the external. Posterior flippers, external finger slightly the longest, all produced; three middle digits with strong black nails

* A cluster of seven craggy islands, south-west of New Zealand, in lat. 48° 3', long. 166° 20', discovered in 1791 by Vancouver, and so named, "as being very likely to draw the unguarded mariner into alarming difficulties" (Vancouver's Voyage, i. p. 71: 4to, London, 1798).

4 inches from the tips of the skin-flaps. The external and internal with only rudimentary nails."

Fig. 1.



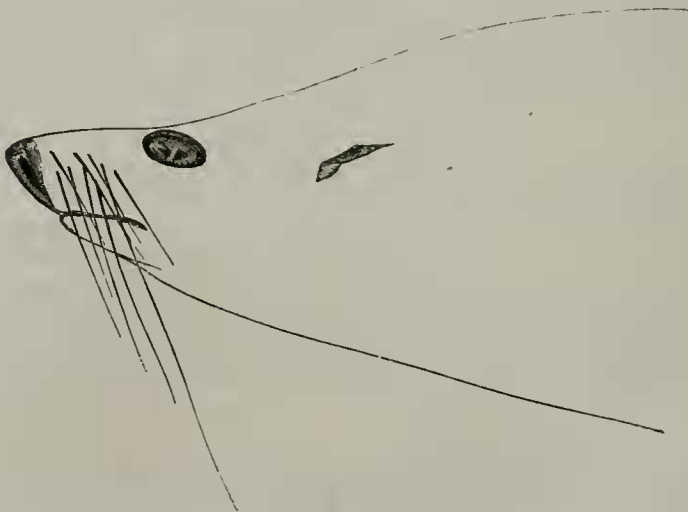
Snout of *Otaria forsteri* ♂. From a sketch by Dr. Hector of specimen A.

B. Female (fig. 2). Skin and skull in British Museum.

	in.	lin.
"Total length	77	0
Girth at flippers	48	0
Length of snout.....	4	5

"Whisker-bristles some black and some white. In both sexes the length of the cartilaginous snout is 2 inches beyond the symphysial knob."

Fig. 2.



Snout of *Otaria forsteri* ♀. From a sketch by Dr. Hector of specimen B.

C. Male. Skin in the Colonial Museum, New Zealand.

"Total length 78 inches.

"Whiskers all white."

D. Female. Skeleton in Colonial Museum, New Zealand.

"Total length 62 inches.

"Hair on rump very short, brownish beneath, whisker-bristles all black but one."

Dr. Hector had previously described specimens taken at Milford Sound, west coast of Otago, in February 1871; but as the descriptions and measurements correspond with the notes I have just read, I need not do more than refer to the paper, which is to be found in the 'Transactions of the New-Zealand Institute,' vol. iv. p. 196, except to remark that he notes a slight difference in the colour of the fur:—"tips of the whole, as laid open by the hand, black; middle parts chestnut-brown, and pure white at base."

I now proceed to describe the specimens exhibited.

The animal in the flesh is a young female.

	inches.
Length from tip of nose to tip of hind feet	30
" " tip of tail	25
" of tail	1
" from tip of nose to edge of anterior pectoral limb, in a straight line	11
" from tip of nose to ear	4
Pectoral limb—length from the shoulder-joint to the furthest extremity of the manus, measured along the outer edge	10
Pelvic limb—length from root of tail to most distant portion of free flipper	6

If we compare these measurements with those of *Otaria jubata*, as given by Dr. Murie (Tr. Z. S. vol. vii. p. 530), or even glance at any of the figures of that animal, it will be seen that the proportions are very different. In that the distance from the muzzle to the root of the tail is 64 inches, and from the same part to the anterior edge of the pectoral limb 23 inches. Consequently the limb is set on at about one third of the distance from the head to the tail, while in this animal it is nearly in the middle of the body. The "manus" preserves the same proportions to the body as in *O. jubata*; but the "pes" is exactly one fifth of the whole length, whereas in the former it is one fourth. It must of course be remembered that the specimen from New Zealand is young; still these differences are almost too great to be accounted for by age alone.

The hair all over the body is coarse, about three quarters of an inch long on the hind quarters, one inch long on the back of the neck, and half an inch long on the top of the head. On the under surface of the body it is three quarters of an inch long on the throat, and half an inch long on the hind quarters. The general colour is black, all over the head and upper parts of the body. Individual hairs, when pulled out, are seen to be of a pale yellow for

the first half of their length, and to have a yellowish tip. The yellow extends further down the hair on the nape of the neck than elsewhere, giving a brindled appearance to that part. On the under surface of the body the hair is reddish brown. At the base of the hair is a dense growth of short delicate fur, of the same colour as the base of the hairs.

In a second specimen, rather older, which has been stuffed and set up in the British Museum, there are slight differences of colouring observable. The brindled appearance of the hair, caused by the hairs being tipped with white, extends all over the back and sides. The reddish brown extends over the underside of the body, and up the chest, where it gradually shades off into a pale chestnut. A space above and behind the mouth, and round the ear, is pale yellow. and there is a patch of dark grey beneath the eye. Ears light brown, black within. Fur on hands and feet dark brown, lighter near the body. The dark brown is shot with bright bay on the feet; and there is a dash of the same, edged with yellow, behind the hands. Shorter whiskers black, hinder and longer ones white.

The "manus" (Plate LXX.) is of the form with which we are familiar in other Otaries; and the naked portion bears the same relation to that covered with hairs as in *Otaria jubata* (*l. c.* pl. 67). The inner edge, however, is very different. There are only three rounded projections of cartilage, corresponding to digits I. II. III.; and in the interspaces of digits I. and II., and II. and III., there is a second, less prominent projection. Beyond digit III. the limb is bounded only by a wavy edge. The movable portions of the digits and the intervening cartilages are much striated and folded. The palmar surface is puckered into large folds, which are crossed by smaller ones, so as to present a number of lozenge-shaped elevations, more or less regular. At the proximal end, these folds are minutely striated with sinuous cuticular elevations.

There are indications of nails on the first four digits; on the last the nail is represented by a minute depression, hardly bigger than a pin's point.

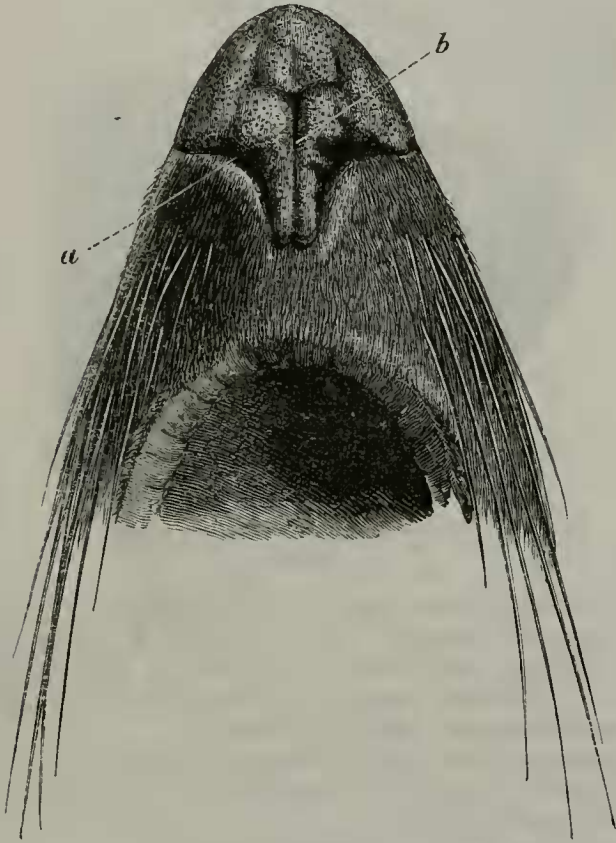
The "pes" (Plate LXXI.) has its upper surface covered with hair, which extends down the back of each digit quite to the nails, the intervening spaces and the terminal cartilages being quite bare. The "pollex" is closely united to the next digit by the intervening cartilage; between the others the cartilage is very elastic, and admits of considerable movement. The under surface, like that of the hand, is broken into irregular folds, and is similarly striated at its proximal end. The three middle digits have nails $\frac{3}{8}$ of an inch long. These are quite rudimentary on the first and fifth. The nails fail to reach the free edge of the cartilage by about their own length.

The distance between the end of the nails on the "pes" and the free edge of the cartilages varies, no doubt, in each species. In *O. ursina*, to judge from Allen's figure (Harvard Bulletin, ii. plate ii. figs. 11 & 12) the distance is 5 inches; in *O. stelleri* (*ibid.* plate i. figs. 6 & 7) it is barely 1 inch. In the "manus" of *O. ursina* only the first two digits are marked by projections in the cartilage; and even

these are of no great size ; in *O. stelleri* each is indicated only by a slight bulging-out.

Snout, nose, and whiskers (fig. 3, p. 663, and fig. 4, p. 664).—Of this part I have fortunately been able to examine the specimen referred to in Dr. Hector's notes, taken from the male, A.

Fig. 3.



Otaria forsteri ♀, nose, seen from beneath.

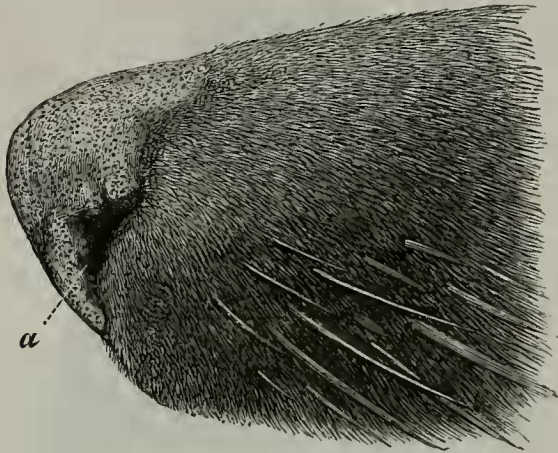
a, nostril ; *b*, median sulcus.

The snout, as appears from Dr. Hector's sketches (figs. 1 and 2) and from the figures drawn from the specimen I am describing (figs. 3 and 4), tapers suddenly somewhat like that of a pig, and is obliquely truncated, with the nostrils on the sloping surface, which is about 3 inches long from the tip of the nose to the edge of the upper lip. The whole of this, together with a considerable space on the upper surface and sides of the snout, is covered with a dark grey epiderm, said to be jet-black during life, beset with minute bristly hairs.

Above, the bare portion of the snout is V-shaped, half an inch long from before backwards in the centre, and about one inch and three quarters long at the sides. The terminal edge is clearly de-

fined ; but for some distance behind it the hairs are not more than one eighth of an inch long, and closely adpressed. Below, the bare portion is T-shaped, about $2\frac{1}{4}$ inches long, and $1\frac{3}{4}$ inch broad at its widest part. The nostrils (figs. 3 and 4, *a*) are separated by a space $1\frac{1}{8}$ inch long by $\frac{3}{4}$ inch broad above, deeply sulcated by a median furrow (fig. 3, *b*). The skin to the right and left of this is marked by delicate striæ, crossing each other in different directions. The

Fig. 4.



Otaria forsteri ♀, nose, seen in profile.
a, nostril.

nostrils are vertical at first, and then diverge at almost a right angle from their former direction. They are not, as might have been expected, hollowed out in the bare portion of the snout, but are external to it ; and their outer side is covered with short hairs, which extend for some distance within their cavity.

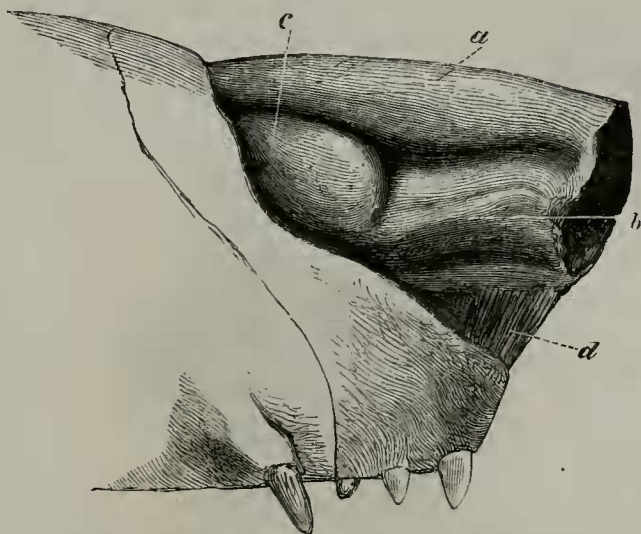
On dissecting off the skin, a remarkable disposition of the nasal cartilages is seen. These I have been able to examine only in the young skull (fig. 5, p. 665).

The "septum nasi" is strong, and apparently immovable. On each side of it, the cartilage which forms the side of the nose is reflected into a fold (fig. 5, *a*), wider in the centre than it is at each end. This fold, which is thin and loose, appears to be easily capable of dilatation, and to disappear completely when the nostrils are fully expanded. Below this there is a second, but much smaller fold (fig. 5, *b*), extending for only half the distance along the "septum;" and behind it, close under the præmaxilla, there is a further expansion into a sort of "bulla," quite isolated from the two folds above described, and apparently incapable of dilatation (fig. 5, *c*). It opens independently by a narrow opening into the nasal cavity. This system of cartilages is kept in position by a ligament (fig. 5, *d*) attached to the bony, peg-like prolongation of the præmaxilla at its symphysis.

In the skull of this specimen, 5 inches in length, the cartilages are

about $1\frac{1}{4}$ inch long, allowing for the part cut off and left in the skin. In an adult, therefore, their length would be rather more than two inches.

Fig. 5.



Otaria forsteri ♀, nasal cartilage, slightly magnified.

a, b, c, folds of the nasal cartilage; d, ligament.

The whiskers are disposed in 5 rows, extending backwards from the nose, with a few straggling hairs between the lip and the first row. There are 4 bristles in each row, so arranged that a bristle in any given row is set opposite to the interval between two bristles in the next. Those of the hind rows are much the longest. In the adult male the same arrangement obtains, as far as I can make out; but several hairs have fallen out. They are stout, flattened, white bristles. The longest measures 8 inches.

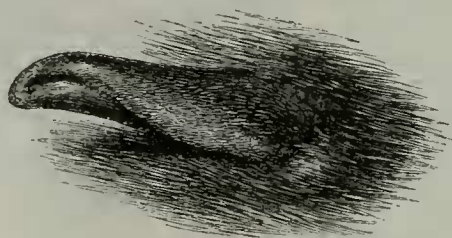
The ears are $1\frac{1}{8}$ inch long (fig. 6), slender in form, and recurved at the tips. Their great length in proportion to the body will be at once observed.

	Length.	Width.
Skull of A	9	$5\frac{3}{4}$
„ B	9	$5\frac{1}{2}$

Teeth, in both specimens, I. $\frac{3-3}{2-2}$, C. $\frac{1-1}{1-1}$, M. $\frac{6-6}{5-5}$, = 36. In the upper jaw, the molars (Plate LXXII. fig. 1) are small, conical, sharply pointed, with a small anterior cusp, which increases in size progressively from the first to the fourth. The fifth molar is much recurved, and consists of a large anterior lobe with a very small posterior one. The last molar is simple, and recurved like the fourth. There is no “cingulum” on the external surface of the teeth; but there is one, not very prominent, on the internal, terminating anteriorly in the small cusp before mentioned. There is rather a wider interval between the last two molars than between

any other two of the series. In the lower jaw the molars are similar in form to those in the upper. The first is extremely diminutive, the second larger, and the last three larger still and of equal size. All have an anterior cusp, increasing progressively from the first to the last, and a more distinct internal cingulum than in the upper jaw. The upper canines are moderate in size; and there is no appreciable difference between the sexes. Those of the lower jaw are much laterally compressed, and have a sharp cutting-edge on their inner surface. When the jaws are closed, the lower molars fall be-

Fig. 6.

*Otaria forsteri*, right ear.

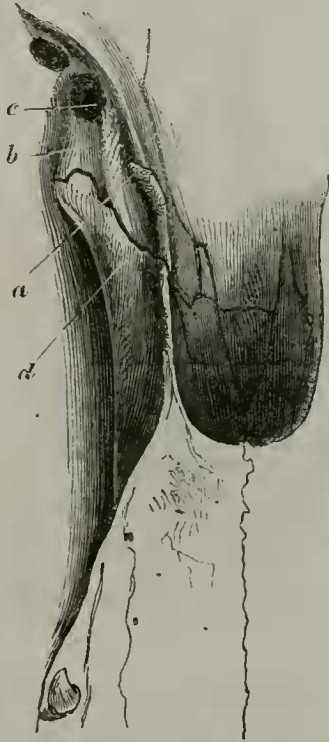
tween, and a little behind, the upper; and the lower canines fit exactly into a deep indentation formed in the præmaxilla, and project backwards $\frac{5}{8}$ inch beyond and behind the root of the exerted portion of the outermost incisor. These last, as usual in the *Otariidæ*, are very large; the four middle ones diminutive and of equal size. In the lower jaw, the two outermost incisors are somewhat larger than the two inner (Plate LXXII. fig. 2).

In both specimens, the anterior portion of the palate is much hollowed out, while the posterior is nearly flat, with its hinder edge bounded by a sharp ridge, which is continued up to the pterygoids (fig. 7, *a*). These are unusually thin and diminutive plates of bone, with small, outwardly curved "hamuli." The pterygoid plate of the alisphenoid (*b*) is extremely strong and broad, divided into two massive pillars of bone, containing the alisphenoid canal (*c*) between them. The innermost of these pillars projects furthest forwards to articulate with the palatine and pterygoid, while the outermost receives an equally massive process of the palatine, which projects outwards and backwards to articulate with it. I observe this construction in the two skulls from New Zealand, and in the four from Amsterdam Island; but I have not found it in any other species of *Otaria*. In most, the pterygoid extends much further back, even articulating with the basisphenoid; and the processes of the alisphenoid are by no means so massive. The hinder edge of the palate is nearly the same in shape in both specimens; only it is slightly narrower in the female.

The mastoid portion of the periotic is produced at its posterior edge into a high ridge or knob. The shape of this differs slightly in the two specimens; but the general character is the same.

The upper surface of the skull is nearly flat; it is much contracted between the orbits. The orbital processes of the frontals curve outwards and backwards, and are truncated at their hinder extremity, which is free. From between these processes the face slopes slightly

Fig. 7.

*Otaria forsteri*, palate-bones.

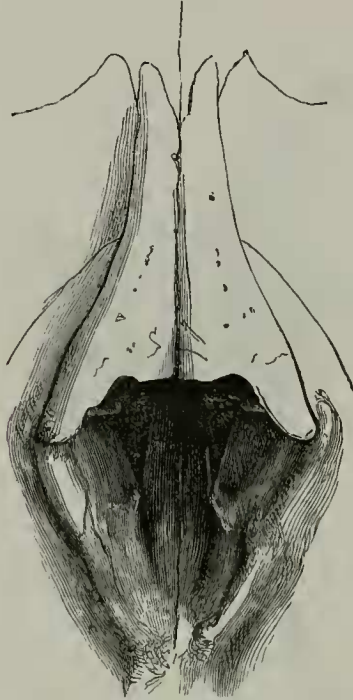
a, pterygoids; *b*, alisphenoid; *c*, alisphenoid canal; *d*, palatine.

downwards. The nasals are very long and narrow (fig. 8, p. 668). The præmaxilla, which projects forwards $1\frac{1}{2}$ inch beyond the nasals, is hollowed out at its sides, and terminates in a very marked knob, to which is attached the ligament which holds the cartilaginous snout in place. These last characters are well shown in Dr. Gray's figure of his *Euotaria cinerea* (Hand-List of Seals, etc. plate xxvi.), based on one of the specimens sent by Dr. Hector from Milford Sound. Most of the teeth, however, have unfortunately been lost. There is a better figure of the same skull, with the teeth, in P. Z. S. 1872, p. 656, figs. 1, 2, where, as afterwards explained by Dr. Gray, it is wrongly marked *Arctocephalus nigrescens*; and I think that the appearance of a second subsidiary lobe on the posterior side of the molars is due to the artist having placed the skull in such a position that he saw the edge of the prominent internal cingulum.

Let us now compare the description by John Reinhold Forster to which reference is so frequently made*.

March 31, 1773. [Cook had landed at Dusky Bay, 5 days previously.]

Fig. 8.



Otaria forsteri, nasal bones.

PHOCA URSINA, L. (Drawing G †.)

Seal with ears; hands free; feet webbed on the under surface, naked between the fingers, hardly nailed.

This species of Seals, in my opinion, most nearly resembles *Phoca ursina*; but it is much smaller, and differs in a few points. Its habits are gregarious: males, females, and cubs live together on rocks surrounded by the sea in Dusky Bay. They are timid, and fling themselves off the rocks into the sea at the approach of man; the older animals, however, if wounded, or surrounded so completely that escape is impossible, bite the weapons with which they are attacked; nay, more, they venture to attack, in the water, the boat that is pursuing them. They swim with such rapidity under water, that a boat rowed by six strong men can scarcely keep up with them. They are extremely tenacious of life; for after they had been pierced by ball in many places, and even through the head, they yet conti-

* Descriptiones Animalium, ed. Lichtenstein, 8vo, Berlin, 1844, p. 64.

† "Figura picta G." This refers to the drawings by his son, described below, p. 671.

nued to live : nay, more ; after their skull had been fractured by an axe they continued to groan loudly for several hours. Old animals stink most foully. The flesh of the young is very delicate ; and was eaten by us, not from necessity, but on account of its excellence. Some weighed as much as 220 lb.*; cubs scarcely 10 or 12. The former exceeded 6 or 7 feet in length ; the latter hardly reached $2\frac{1}{2}$.

The body is conical from the shoulders to the tail, and conical in the reverse direction from the shoulders to the head†. The hair all over the body is adpressed, short, soft, black, with reddish grey tips. Beneath the hair is a soft, thick, delicate, reddish fur. Head rounded ; snout, from the eyes forwards, pointed ; behind the eyes the head suddenly bulges out‡. Mouth prominent. Nose black, naked. Septum hollowed out into a channel. Nostrils vertical at first, then diverge sideways at a right angle. Lips moderate. Whiskers few, strong, bristly, arranged in five rows, after the manner of a quincunx, black ; the hindermost, especially in the old individuals, stronger, white. Teeth separate, white. Incisors with broad crowns, 4 in each jaw ; the upper have their crowns double, with points before and behind ; the lower simple. Upper canines 2 on each side, strong, subconical, recurved, sharply keeled on their inner edge : the inner smaller than the outer, which is six tenths of an inch longer. Lower canines one on each side, smaller than the outer one of the upper jaw, but larger than the inner. Upper molars 6 on each side, strong, subconical, like those of a dog ; at their roots on each side are rudiments, like the germs of new teeth§. Lower molars 5 on each side. Total—upper teeth 20, lower teeth 16,=36.

Tongue beset with papillæ ; the point indented or emarginate. Palate disposed in folds. Eyes rather prominent, full, spherical, with a “membrana nictitans” on their inner edge. Iris dark. Ears small, folded, erect, rather stiff, sublanceolate, hairy on the outside, smooth on the inside.

Hands free, fin-shaped (not, as in most Seals, concealed beneath the skin). On the upper surface they are covered with hair down to the nails ; the rest, and the under surface, destitute of hair, black ; in form subtriangular ; on the under surface, from the apex up to the body, the skin is disposed in wavy folds. The rudimentary nails are very small, shaped like lentil seeds, and situated at the apex of the phalanges before the cartilaginous prolongations commence. The entire hand is a shapeless, undefined mass, but jointed within beneath the skin||.

* Dr. Hector gives the weight of two males as 258 and 270 lb. respectively ; of a female 208 lb. (Trans. N.Z. Inst. iv. 296).

† “Corpus subconicum a humeris ad caudam, et obconicum a humeris ad caput.”

‡ “Caput subglobosum, versus rostrum attenuatum ad oculos, versus corpus subito incrementum caput.”

§ “Ad quorum radices utrinque sunt gemmæ quasi novorum dentium.”

|| “Rudimenta unguiculorum minima, lentiformia, ad apices phalangium, ante epiphyses cartilagineas sitæ. Tota forma manuum moles rudis et indistincta, at interior sub cute articulata.”

Feet webbed, the outermost toe three times as broad as the rest, the innermost twice as broad. Toes all subequal, covered with hair on their upper surface; but the spaces between the fingers are bare, and so is the whole plantar surface of the foot. Between the toes the cartilage is emarginate. On the outermost and innermost toes are the rudiments of nails only; on the three middle ones are linear, blunted, semicylindrical nails close to the end of the digit, before the cartilaginous epiphyses commence.

Tail short, conical, covered with hair between the feet.

N.B. The example described was small, scarcely of middle size, and weighed only $32\frac{1}{2}$ pounds; from this the measurements were taken. In larger specimens all the limbs were larger, but maintained the same proportions.

	ft.	in.
Length from nose to tip of middle digit of "pes" ..	3	$9\frac{1}{2}$
" " to end of tail	3	$2\frac{1}{2}$
" of tail		2
" of "pes," to tip of "pollex"		9
Breadth of "pes" at tarsal joint*		$2\frac{2}{5}$
" at distal extremity		5
"Pes" from tarsal joint† to the origin of nail of middle finger		$6\frac{1}{2}$
Length of nail of middle toe		$0\frac{7}{10}$
Breadth of nail of middle toe		$0\frac{1}{5}$
Length of "manus"	1	0
Breadth of "manus" close to body‡		$3\frac{3}{5}$
Breadth of "manus" from the apex to the point where the first hairs grow		6
Length of "manus" to the origin of the nail		9
Length of nails		$0\frac{3}{10}$
Breadth of nails		$0\frac{1}{10}$
Distance from median point of upper lip to opening of nose above		$1\frac{3}{10}$
Length of "septum narium"		$0\frac{2}{10}$
Distance from median point of upper lip to anterior edge of orbit		$2\frac{1}{2}$
From outer edge of orbit to edge of cornea§		1
From median point of upper lip to origin of ear		5
" " to angle of mouth ..		$2\frac{3}{10}$
Length of ear		$1\frac{6}{10}$
" whisker		$3\frac{1}{2}$
" " in larger specimen		$5\frac{1}{2}$
Girth of head behind ear	1	3
" body at shoulder	2	$0\frac{2}{10}$
" " anus		$10\frac{1}{2}$
Length from mouth to anus	3	$1\frac{2}{10}$

I submit that there can be no doubt that this description refers to

* "Pes latus ad lacertos."

† "A lacertis."

‡ "Ad insertionem armi."

§ "A cantho majore ad minorem."

our animal. It corresponds exactly in all its most important points, as in colour, position and shape of nostrils, and form of the hind feet. The only sentence that puzzles me is that referring to the molar teeth. Forster says:—"At their roots on each side [utrinque] are rudiments, like the germs of new teeth." From the use of the word "utrinque" in other parts of his description, I feel nearly sure that he means "on both sides of the jaw;" but of course the word would most naturally signify "on both sides of the tooth," and imply that it had two subordinate cusps. This, however, would not agree, so far as we know any thing about the New-Zealand Seals, with the possession of copious under-fur.

There is a figure of this *Otaria* among Forster's drawings in the British Museum, which were executed, not by John Reinhold Forster, but by his son George Forster. It is on a folio page $19\frac{1}{4} \times 13$ ", marked (2). It represents a small *Otaria* lying on a rock, with its feet stretched out behind it, of a dark brown colour. It is badly drawn, and very unlike Forster's vigorous and artistic style. The nails are indicated as being distant from the free edge of the cartilage by about their own length. The snout is made to project considerably beyond the lower lip. Beneath is written, in pencil "*PHOCA URSINA—potius volans,*" *antarctica*, for *ursina*, having been erased,—and on back, "Dusky Bay, a young animal 6 to 10 feet in length" (*sic*). The sketch is not signed "G. Forster" as most of the others are*.

In the Zoology of the Voyage of the 'Astrolabe,' by Quoy and Gaimard, two species of *Otaria* are described—one called *Otarie cendrée*, and the other *Otarie australe*; and the skull and animal of both species are figured. Let us take the former first. The authors regard it as identical with the *Otaria cinerea* of Péron. If so, it cannot be our animal; for Péron describes his *Otaria cinerea* as having "short, hard, coarse hair," and contrasts it with "Seals of smaller size which possess fur of good quality." Again, the description of Messrs. Quoy and Gaimard indicates an animal with

* As Forster's drawings of Otarias are often referred to, and as, with reference to this very species, I find in Dr. Gray's latest publication ('Hand-List of Seals, etc. p. 35) the following statement—"Several beautiful drawings of the animal were made for Sir Joseph Banks, which are now with the rest of his drawings in the Botanical Department in the British Museum,"—I examined the set carefully last summer, and found that there were only three drawings of Pinnipedia in all. The first is the one described above, marked "2."

That marked "3" is a double sheet of paper 28×21 ", labelled "*Phoca leonina*, Linn.," and Jan. 11, 1775 in corner. "*Phoca leonina*" is written again at the bottom of the page—and on back, "South Georgia." It is a pencil sketch of a large Pinniped, with the upper jaw projecting considerably beyond the lower, but is clearly not an *Otaria*. It is probably a Sea-elephant. Nails are indicated on fore flippers, none on hind. Signed in left corner, "Forster."

That marked "4" is a very spirited sketch in pencil, as large as the last, of an old male Sea-lion with an abundant mane, in a sitting position, upright and defiant, with his hind feet brought under his body. It is marked "*Phoca jubata*, Staten Land, 2 Jan. 1775," and on back "Year's Islands, near Staten Land." It has been signed in left corner; but the signature has become nearly obliterated. Only part of the last syllable remains, but enough to show that the handwriting is the same as that on the others.

much the same characters as Péron does—adding, that when the hair is divided “a reddish fur of no great thickness is seen”*.

Lastly, though the skull has some characters in common with that of our specimen, as the way in which the incisors and canines interlock, and the peg-like process at the union of the præmaxillæ, the molars are quite different. They have all three cusps each. I examined this skull on two successive visits to Paris last summer. It is marked “1539. *Phoque cendrée* ou *ourson*, *Phoca cinerea* ou *ursina*, adulte du Port Jackson, Nouvelle Hollande, par MM. Quoy et Gaimard, expédition de l’Astrolabe etc. Août 1827, Voy. de l’Astr. 89. Peau à la Zoologie.” Its length is $10\frac{1}{2}$ inches, width $6\frac{1}{2}$. The molars, $\frac{6-6}{5-5}$, have never been disturbed. The opening of the palate is long and V-shaped. The whole skull bears a very close resemblance to that of the type of *Otaria delalandei*=*O. pusilla*, from the Cape of Good Hope. The stuffed skin in the Zoological Museum, No. 202, is in a bad state, faded and dilapidated. It indicates an animal about 8 feet long, without under-fur. The figures of it in the plates of the ‘Voyage de l’Astrolabe’ (plates 12, 13) are clearly inaccurate. Plate 12 shows nails on all the digits of both “pes” and “manus;” plate 13, on all those of the “manus” and on four only of the “pes”†. On the whole, therefore, I am disposed to think that the name *O. cinerea* should be restricted to this species, and the older name *O. forsteri*, given by Lesson (Dict. Class. d’Histoire Naturelle, xiii. 421), reserved for our animal. The name *cinerea* was applied to the latter by Dr. Gray, though he doubted whether it really was identical with the *O. cinerea* of Péron (Supplement to the Catalogue of Seals and Whales in the British Museum, 1871, p. 24; Ann. & Mag. Nat. Hist. 1866, xviii. p. 236), when describing as “*Arctocephalus cinereus*, Australian Fur-Seal,” two young skulls and a stuffed skin sent from North Australia by Mr. John Macgillivray in 1853; on which specimen he founded subsequently his genus *Gypsophoca* (P. Z. S. 1872, p. 659). I have studied these skulls carefully, and feel certain that they are only the young of our animal—an opinion which I am glad to find is shared by Dr. Hector. The stuffed specimen in the British Museum is 3 feet $5\frac{1}{2}$ inches long. Pelage dark brown, nearly black above, with a dense pale brown fur over the whole body, thickest on the back. On the breast, a light yellow tip appears upon the hair, which becomes longer under the throat. Beneath and round the eye is a dark spot. The pale colour of the throat extends between eye and ear, and over the under surface of the body.

This brings me to the skulls from Amsterdam Island marked *e, f, g, h*:—*e*. $6\frac{1}{2}$ inches long, $3\frac{3}{4}$ wide; *f*. $6\frac{1}{2}$ inches long, 4 wide; *g*. $7\frac{1}{2}$ inches long, $4\frac{3}{4}$ wide; *h*. $7\frac{1}{4}$ inches long, 4 wide.

Teeth normal in all except *g*, where the last upper molar on the

* “On voit un feutre roux peu épais” (Zoologie de l’Astrolabe, i. p. 90).

† The description (Zoologie, i. p. 90) says: “Les ongles des membres antérieurs sont à peine indiqués. Ceux des postérieurs sont étroits; les trois intermédiaires sont plus saillans, et l’extérieur n’est point apparent.”